Large Scale Networking and Next Generation Internet Initiative

Briefing to Presidential Advisory Committee

Working Group Co-Chairs
Dr. David Nelson, DOE
Dr. George Strawn, NSF

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LSN Working Group Goals

- Develop/test 21st century networking technologies and services
- Coordinate research/demonstration of future internetworking technologies and concepts
- Encourage large scale networking activities and application testbeds, together with other working groups
- Work with Applications Council to encourage network applications

Next Generation Internet Initiative

Goals	Metrics
1. Connect universities, national labs and research institutions with high-performance networks: **1.1 At least 100 organizations at speeds of 100 times today's Internet** **1.2 At least 10 organizations at speeds of 1000 times today's Internet**	**end-to-end performance; number of institutions connected**
2. Promote experimentation with the next generation of networking technologies	**quality of service; adoption of technologies by commercial internet**
3. Demonstrate new applications that meet important national goals and missions	**100+ high importance applications; value of applications in testing network technologies**

21st Century Applications
Federal and Academic Applications

Network Uses	**Application Examples**	**Rqmts**
Teleoperation	Telemedicine, Distance Learning, Telescience	1 Gbps
Virtual Reality, Visualization	Battlefield awareness, Virtual Aerospace environment, Engineering	155 Mbps-1 Gbps
Collaboratories	Chesapeake Bay virtual environment, Materials collaboratory	155 Mbps/ link
Network Research	Intelligent Assistants, Optical Nets, Systems of systems	10 Gbps
Distributed Data and Digital Libraries	Genome Database, Patient records, Earth and Space science	1 Gbps
Computation	Aerodynamics, astrophysics, Global Change, Stockpile Stewardship	2.4 Gbps

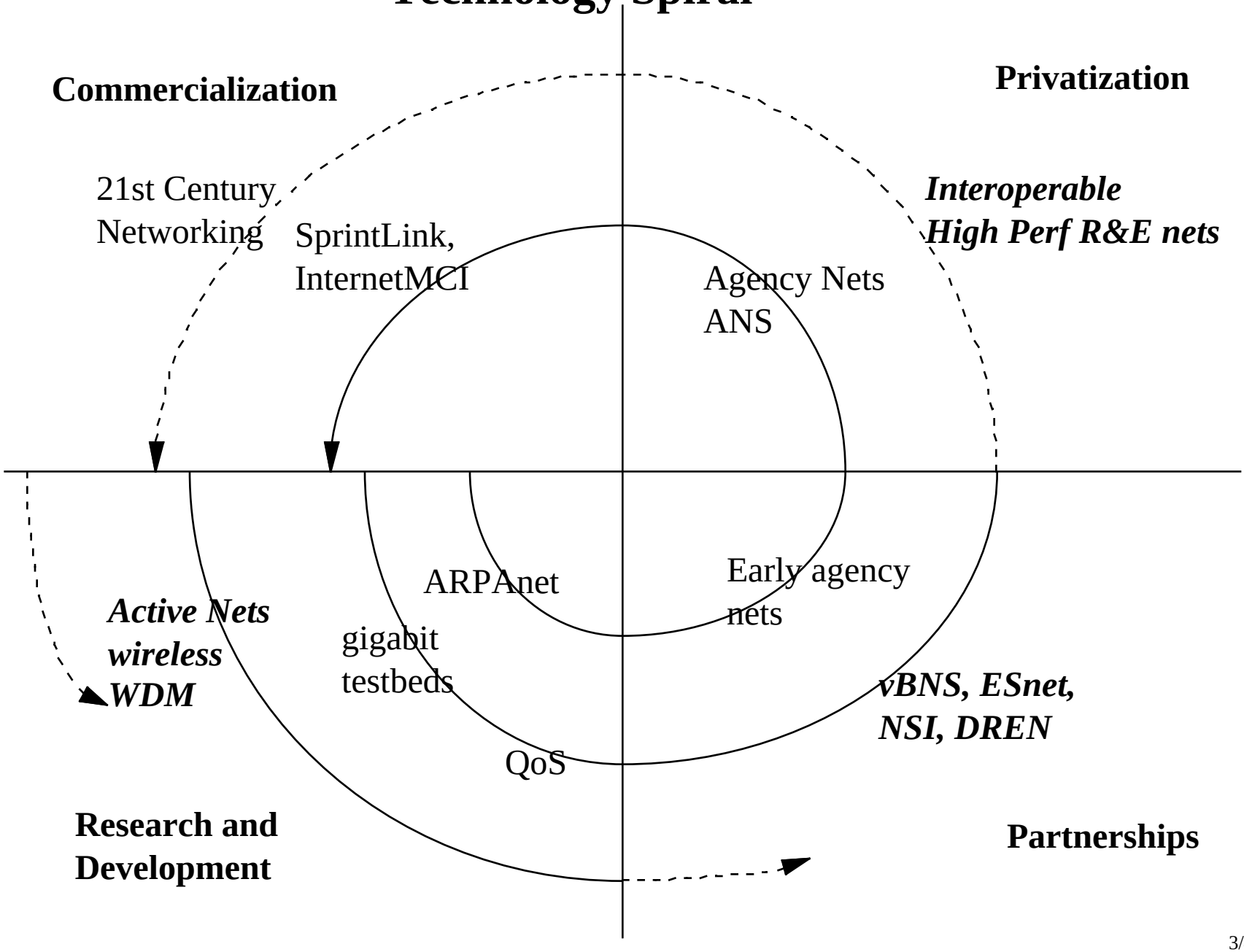
Proposed Initiative Budget
($ in Millions)

				(Outyear Planning)	
	1998	**1999**	**2000**	**2001**	**2002**
Goal 1.1*	40	40	35	35	30
Goal 1.2	20	20	25	25	30
Goal 2	30	30	30	25	20
Goal 3	10	10	10	15	20
Totals	100	100	100	100	100

*Note: Cost sharing may reduce cost of Goal 1.1 by $5M per year. Savings would be applied to increase Goal 3 budget.

Draft Initiative Deliverables	First Achieved
• 100+ site high-performance testbed providing OC-3 connections over OC-12 infrastructure	1999
• Federal-Academic-Industry partnerships conducting applications/networking research on this testbed	1999-2000
• 10+ site ultra-high performance testbed(s) providing OC-48 connections	1999-2000
• Partnerships conducting networking/applications research on ultra-high performance testbed	2000-2001
• Tested models for next-generation internet protocols, management tools, quality of service provisions, security, and advanced services	2000
• Full goal of 100+ high value applications testing and benefiting from high-performance testbed	1999-2000
• Full goal of 10+ advanced applications testing and benefiting from ultra-high performance testbed	2001-2002

Technology Spiral



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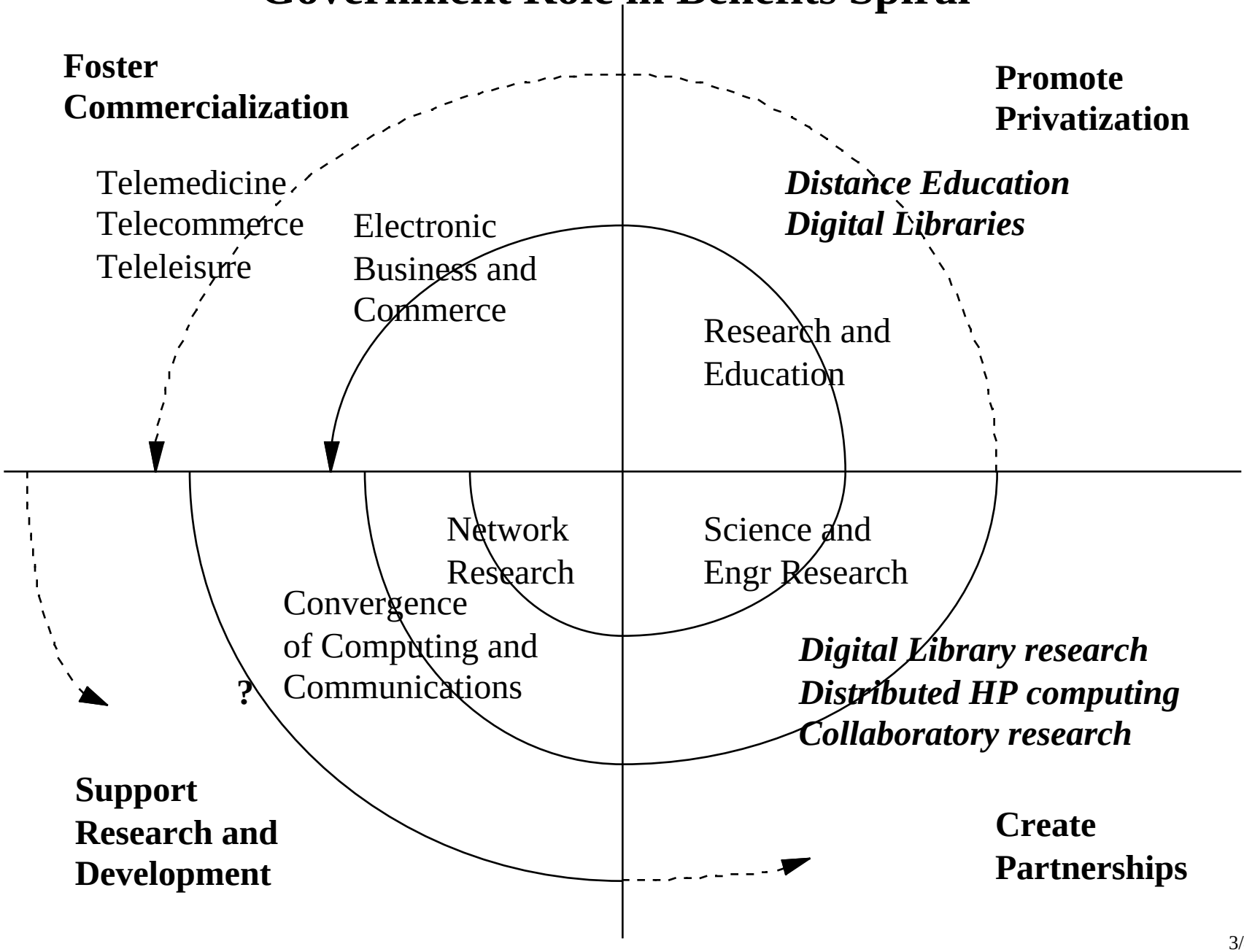
Government Role in Benefits Spiral



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Strategic Approach

- Build 100x network testbed starting with existing high-end networks
  - DREN (DoD), ESnet (DOE), NSI (NASA), vBNS (NSF)
- Build 1000x testbed starting with DARPA testbed
- Strong public-private sector partnerships
- Devote 10% of NGI budgets to enable applications

Near-term Activities

Activity	Date
• Hold planning workshop	January (done)
• Start up implementation team	February (done)
• Release draft concept paper	February
• Begin work on implementation plan	March
• Begin interconnecting agency networks	April
• Hold Concept/Partners workshop	May
• Release final concept paper	June
• Complete draft implementation plan	August

Possible Issues for Advisory Committee

- What are the appropriate roles for federal, university, and private sector partners?
- Is the balance of efforts among initiative goals correct?
- Are the technical goals and milestones appropriate?